#6/Appeal Brief Hawkins 2/26/02

IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

PATENT APPLICATION

In re Application of: **Macleod *et al.***

Docket #: **A-59709-3/JAS**

Serial No.: **09/631,438** Filed: **August 2, 2000**

Group Art Unit: **2834** Examiner: **Dang D Le**

Title: **MAGNETIZING APPARATUS**

BRIEF ON APPEAL

Honorable Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Sir:

The following appeal brief is submitted pursuant to the Notice of Appeal filed on November 14, 2001 in the above-identified application.

REAL PARTY IN INTEREST

The real party in interest is Seagate Technologies, LLC.

RELATED APPEALS AND INTERFERENCES

No other appeals or interferences that directly affect, or are directly affected by, or have a bearing on the Board's decision in the pending appeal are known to the Appellants, Appellants' legal counsel, or the Assignee.

STATUS OF CLAIMS

Claims 6-9 stand under final rejection, from which this appeal is taken.

STATUS OF AMENDMENTS

A first Office Action by the Examiner mailed December 6, 2000 (paper no. 3) rejected claims 6-8. In response, a first amendment was filed on March 6, 2001. The first amendment included amending claim 6. In particular, the limitation of a "circular" magnet and a "circular" inner core of the magnetizer were added. Furthermore, new claim 9, which is dependent from claim 6, was also added to the claim set.

The Examiner responded to Appellants' March 6, 2001 amendment in a Final Office Action dated June 14, 2001 (paper no. 10). In the Final Office Action, the Examiner considered Appellants' arguments for claims 6-9, but the Examiner did not find the Appellants' arguments to be persuasive. The Examiner reiterated the rejection of the claims.

Appellants filed a second amendment under 37 C.F.R. § 1.116 on September 24, 2001 to overcome the Examiner's rejection as stated in the Final Office Action. The second amendment included amending claim 6 for a second time. In particular, the limitation of an "axial" and "axially" was respectively changed to --radial-- and --radially-- to further define the relationship between the elements of the Appellants' invention.

The Examiner sustained the rejection in an Advisory Action mailed October 23, 2001 (paper no. 13) and indicated that the request for reconsideration had been considered but did not place the application in condition for allowance because of the outstanding rejections. In response, Appellants filed a Notice of Appeal on November 14, 2001.

SUMMARY OF INVENTION

The present invention is a magnetizer for magnetizing a magnet (50). The magnet is circular having a plurality of alternating north/south poles and a null transition zone disposed between each alternating pole. The magnetizer generates the alternating north/south poles and null transitions zones therebetween.

In particular, the magnetizer comprises a back iron (54) circumscribing a circular insulative inner core (52). The magnet (50) is disposed between the inner circumference of the back iron (54) and outer circumference of the inner core (52). In one embodiment, a gap (159) is formed between the outer circumference of the magnet (50) and the inner circumference of the back iron (54).

A plurality of wire pairs (56, 58) are axially disposed through the circular insulative inner core (52), where each wire pair are located close together. Figure 8A depicts a top-plan, cross-sectional view of the magnetizer, where one illustrative pair of wires identified with an "x" show the current flow into the drawing page, while, the pair of wires identified with a "·" (i.e., "dot") show the current flow out of the drawing page. When current flows through the paired wires, flux fields (57, 59) are created around each pair of wires (56, 58). The flux fields generated by the paired wires establishes a magnetic field between the inner core (52) and the back iron (54) to magnetize the magnet (50). The null transition zones are formed in the regions between the paired wires (56, 58) where there is no flux field from the paired wires passing through the magnet (50).

For the convenience of the Board of Patent Appeals and Interferences, Appellants' claim 6 (the broadest independent claim for an apparatus) is presented below in claim format with elements read on FIGS. 8A and 8B of the drawings, as suggested in MPEP 1206. However, it should be understood that the appealed claim may read on other portions of the specification or other figures that are not listed below.

Claim 6 positively recites (with reference numerals added):

> 6. "A magnetizer for magnetizing a circular magnet (50) with a null zone (156, 158) intermediate alternating poles comprising a circular insulating core (52) supporting pairs of axially directed wires (56, 58), each pair of wires (156, 158) adapted to carry current in the same axial direction, and a back iron (54) radially spaced from said core (52) by a sufficient radial gap (159) to allow said magnet (50) to be magnetized to slip into said radial gap (159), the flux being shaped to create alternating

magnetic poles separated by a null zone (156, 158) around said magnet (50)."

ISSUES

A. Whether claims 6-9 are patentable under 35 U.S.C. §102 over Soeda *et al.* (US patent 5,200,729).

GROUPING OF CLAIMS

The rejected claims have been grouped together in the rejection. Appellants urge that each of the rejected claims stands on its own recitation, the claims being considered to be separately patentable for reasons set forth in more detail infra.

THE REFERENCES

The following reference is relied on by the Examiner:

Author	Publication Title or Reference number	Publication Date
Soeda *et al.*	US Patent 5,200,729	April 6, 1993

BRIEF DESCRIPTION OF THE REFERENCES

A. Soeda *et al.*

Soeda *et al.* (hereinafter "Soeda") discloses a permanent magnet and magnetization apparatus for producing the permanent magnet. The permanent magnet is formed by a single circular piece of magnetic material in which south and north poles are alternately continuously formed through non-magnetic flux regions or weak magnetic flux regions interposed therebetween (see Soeda, Abstract).

The magnetization apparatus comprises a donut shaped back iron (yoke 20) having projection portions (20a through 20d) extruding radially inward. Each projection portion is separated by a space therebetween. A magnetizing

coil (22), connected to a DC power source (26) through a switch (28), is wound around each projection portion (20a through 20d) of the magnetizing yoke (20). The permanent magnet (24) has a diameter less than the inner diameter of the magnetizer (i.e., the projections 20a through 20d) and is disposed therein. A direct current from the DC power source (26) instantaneously flows in the coil (22) such that magnetic flux (F) flows from one projection portion to an adjacent projection portion (e.g., projection portions 20b to 20a) through the permanent magnetized 24 (see Soeda, Col. 1, lines 33-50). As a result, magnetization is performed on the magnetized object (24) in a manner so that S and N poles are alternately formed proximate the projection portions (see Soeda, Col. 1, lines 50-53, Figures 3A and 3B). The non-magnetic flux regions or weak magnetic flux regions are formed between the alternating poles proximate the spaces between the projection portions (20a-20d).

Additionally, a shorting yoke projection (21a-21d) projects from each respective space between the projection portions (20a-20d). A magnetic flux portion F1 of the magnetic flux (F) also flows through the shorting yoke projections (21a-21d) from each respective projection portion (20a-20d). Each shorting yoke projection (21a-21d) has a shorting coil (50a-50d) wrapped thereon. A current, delayed by 90 degrees with respect to the current flowing through the magnetizing coil 22, flows through the shorting coils (50a-50d) to generate a magnetic flux (F2), which cancels the magnetic flux F1. Therefore, the magnetic flux F1 and the magnetic flux F2 cancel each other proximate the shorting yoke projection portions (21a-21d), so that only a small quantity of magnetic flux passes through the shorting yoke projection portions (21a-21d) (see Soeda, Col. 5, lines 13-30 and Figures 9A-9C).

ARGUMENT

THE ISSUES UNDER 35 U.S.C. § 102

It is submitted that a reasonable interpretation of the reference as proposed by the Examiner in the First Office Action and the Final Office Action

would not have resulted in or anticipated the invention recited in the Appellants' claims.

In the Final Office Action, the Examiner has rejected claims 6-9 under 35 U.S.C. § 102 as being anticipated and unpatentable by the Soeda *et al* reference.

Specifically, the Examiner alleged that:

> "Soeda *et al.* discloses a magnetizer (Figure 9A) for magnetizing a circular magnet (30) with a null zone intermediate alternating poles comprising a circular insulating core (20) supporting pairs of axially directed wires (22), each pair of wires adapted to carry current in the same axial direction, and a back iron (20) axially spaced [radially] spaced from the core by a sufficient radial gap to allow the magnet to be magnetized to slip into the radial gap, the flux being shaped (by shorting yoke portions 21) to create alternating magnetic poles (30a and 30c) separated by a null zone (30b) around the magnet."

A. 35 U.S.C. § 102 - Claim 6

Independent claim 6 recites:

> "A magnetizer for magnetizing a circular magnet with a null zone intermediate alternating poles comprising a circular insulating core supporting pairs of axially directed wires, each pair of wires adapted to carry current in the same axial direction, and a back iron radially spaced from said core by a sufficient radial gap to allow the magnet to be magnetized to slip into the radial gap, the flux being shaped to create alternating magnetic poles separated by a null zone around the magnet."

The Soeda reference fails to teach or disclose each and every element, as arranged in the claim. In particular, Soeda fails to teach or disclose a circular insulating core supporting pairs of axially directed wires. The circular insulating core (52) of the Appellants' invention supports the circular magnet (50). That is, the outer surface of the circular insulating core (52) is circumscribed and supports the circular magnet 50 (see Figure 8A). Moreover, a back iron (54) is radially spaced and circumscribes the circular insulative core (52).

The Examiner has improperly identified the yoke (20) of Figures 9A and

9B as the circular insulating core of the Appellants' invention. In fact, the yoke of Soeda is equivalent to Appellants' back iron, while Soeda is completely silent with regard to a circular insulating core.

"Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim" (Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984)(citing Connell v. Sears, Roebuck & Co., 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)) (emphasis added). The Soeda reference fails to disclose each and every element of the claimed invention, as arranged in the claim.

The Appellants' invention claims that the circular insulating core supports pairs of axially directed wires. Thus, the Appellants' invention is completely different from the Soeda reference. That is, the circular insulative core is not disclosed in Soeda. Moreover, since the circular insulative core is not disclosed in Soeda, the limitation that "a back iron (20) radially spaced from the core by a sufficient radial gap to allow the magnet to be magnetized to slip into the radial gap is also not taught by Soeda." Therefore, each and every element of the claimed invention is not disclosed by Soeda.

Furthermore, Soeda discloses that a single magnetizing coil (22) is wrapped around each of a plurality of projection portions. Appellant directs the Board to, for example, 20a through 20d of Figures 9A and 9B of Soeda. As seen in Figures 9A and 9B of Soeda, the plurality of projection portions (20) circumscribe the magnet, such that the magnetizing coils wrapped around each projection portion also circumscribe the outer portion of the magnet. By contrast, the Appellants' invention has the pairs of axially directed wires disposed within the insulating core, which are disposed within the inner circumference of the magnet (see Appellants' Figure 8A).

Moreover, the Board's attention is directed to the fact that the magnetic flux fields created by the pair of wires in the insulative core of Appellants' invention are 90 degrees apart from the flux field disclosed by the Soeda

reference. Using the well known "right-hand-rule" to determine the direction of the magnetic fields generated by a wire conducting current, a person skilled in the art will easily recognize that the axially directed wire pairs produce a magnetic field that crosses the gap and the magnet to the back iron and return. By contrast, the wires in the Soeda reference are circumferentially directed and would produce a corresponding field 90 degrees apart from the axially aligned wires of the Appellants' invention. Therefore, each and every element of the claimed invention, as arranged in the claim, is not disclosed in the Soeda reference. Hence, the Examiner's conclusion is flawed and without merit.

Therefore, the Appellants submit that independent claim 6, as it now stands, is not anticipated and fully satisfies the requirements under the provisions of 35 U.S.C. §102 and is patentable thereunder.

B. 35 U.S.C. § 102 - Claim 7.

The Examiner has rejected claim 7 as being anticipated and unpatentable by Soeda. The rejection is respectfully traversed.

First, claim 7 depends directly from claim 6 and recites additional features thereof. Since the Soeda reference does not anticipate the Appellants' invention as recited in Appellants' independent claim 6, dependent claim 7 is also not anticipated and is allowable for at least the same reasons as stated above.

Second, dependent claim 7 specifically recites the additional limitation of "wherein said gap is of sufficient radial extent that a portion of said gap remains open when said magnet is inserted so that said transition zone of said magnet is softened." The Board's attention is again directed to the fact that the Soeda reference simply does not teach or disclose "a circular insulating core supporting pairs of axially directed wires, each pair of wires adapted to carry current in the same axial direction, and a back iron radially spaced from the core by a sufficient radial gap to allow the magnet to be magnetized to slip into the radial gap, wherein the gap is of sufficient radial

extent that a portion of the gap remains open when the magnet is inserted so that said transition zone of the magnet is softened."

That is, the Soeda reference is completely devoid of any disclosure regarding "a circular insulating core" and "a back iron radially spaced from the insulating core by a sufficient radial gap to allow the magnet to be magnetized to slip into the radial gap." Since Soeda fails to disclose a gap between the circular insulative core and the back iron, Soeda cannot possibly teach that a portion of the gap remains open when the magnet is inserted.

As such, the Examiner has cited prior art that does not teach each and every element in the claimed invention, as arranged in the claim. Accordingly, there is no suggestion or motivation to make the proposed modification. Therefore, the Appellants submit that claim 7, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102, and is patentable thereunder.

C. 35 U.S.C. § 102 - Claim 9.

The Examiner has rejected claim 9 as being anticipated and unpatentable by Soeda. The rejection is respectfully traversed.

First, claim 9 depends directly from claim 6 and recites additional features thereof. Since the Soeda reference does not anticipate the Appellants' invention as recited in Appellants' independent claim 6, dependent claim 9 is also not anticipated and is allowable for at least the same reasons as stated above.

Second, dependent claim 9 specifically recites the additional limitation of wherein "adjacent pairs of wires carrying current in opposite directions." The Board's attention is again directed to the fact that the Soeda simply does not teach or disclose "a circular insulating core supporting pairs of axially directed wires, each pair of wires adapted to carry current in opposite axial direction, and a back iron radially spaced from said core by a sufficient radial gap to allow said magnet to be magnetized to slip into said radial gap."

By contrast, Soeda discloses utilizing projection portions having spaces

therebetween and a magnetizing coil wrapped around each projection portion. Moreover, a shorting coil wrapped around a shorting yoke projection is disposed within each space between each projection portion. The canceling effects of the magnetic flux, as between the magnetic flux from the projection portions and the shorting yoke projection and the magnetic flux from the shorting yoke projection, cause the weak magnetic flux state (softening) between the alternating poles. This is completely different from the Appellants' invention, which utilizes axially directed wire pairs extending through the circular insulating core.

As such, the Examiner has cited prior art that does not teach each and every element in the claimed invention, as arranged in the claim. Accordingly, there is no suggestion or motivation to make the proposed modification. Therefore, the Appellants submit that claim 9, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102, and is patentable thereunder.

D. 35 U.S.C. § 102 - Claim 8.

The Examiner has rejected claim 8 as being anticipated and unpatentable by Soeda. The rejection is respectfully traversed.

Independent claim 8 recites:

> "A magnetizer for magnetizing a magnet with null zones intermediate alternating poles comprising
> means for supporting said magnet in said magnetizer and
> conductive means for creating a flux path through said magnet which establishes said null zones in said magnet." (emphasis added).

First, the means-plus-function claims can be interpreted only to read on Figures 8A and 8B, whereby a flux path is created to run through the magnet to the back iron and return to establish the null zones in the magnet. The Appellants' invention utilizes axially directed wire pairs extending through the circular insulating core (see Appellants Figures 8A and 8B).

By contrast, Soeda creates a magnetic field as shown in Figure 10A, which passes circumferentially along the magnet to magnetize the magnet.

This is a completely different device from the Appellants' invention, since Soeda fails to disclose or teach " a conductive means for creating a flux path through the magnet, which establishes the null zones in the magnet."

As such, the Examiner has cited prior art that does not teach each and every element in the claimed invention, as arranged in the claim. Therefore, the Appellants submit that claim 8, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102, and is patentable thereunder.

CONCLUSIONS

For the reasons advanced above, Appellants respectfully indicate that the rejection of claims 6-9 as being anticipated under 35 U.S.C. § 102 is improper. Reversal of the rejections in this appeal is respectfully requested.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. If necessary, please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 20-0782 and please credit any excess fees to such deposit account.

Respectfully submitted,

1-14-02

Raymond R. Moser, Jr.
Attorney for the Appellants
Reg. No. 34,682

APPENDIX I
APPEALED PENDING CLAIMS

6. A magnetizer for magnetizing a circular magnet with a null zone intermediate alternating poles comprising a circular insulating core supporting pairs of axially directed wires, each pair of wires adapted to carry current in the same axial direction, and a back iron radially spaced from said core by a sufficient radial gap to allow said magnet to be magnetized to slip into said radial gap, the flux being shaped to create alternating magnetic poles separated by a null zone around said magnet.

7. A magnetizer as claimed in Claim 6 wherein said gap is of sufficient radial extent that a portion of said gap remains open when said magnet is inserted so that said transition zone of said magnet is softened.

8. A magnetizer for magnetizing a magnet with null zones intermediate alternating poles comprising

means for supporting said magnet in said magnetizer and

conductive means for creating a flux path through said magnet which establishes said null zones in said magnet."

9. A magnetizer as claimed in claim 6, adjacent pairs of wires carrying current in opposite directions.